

DOCUMENT RESUME

ED 446 237

CE 080 831

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TITLE Standards: An Embarrassment of Riches. In Brief: Fast Facts for Policy and Practice No. 4.
INSTITUTION National Dissemination Center for Career and Technical Education, Columbus, OH.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE 2000-11-00
NOTE 4p.
CONTRACT V051A990004
AVAILABLE FROM For full text:
<http://www.nccte.com/publications/infosynthesis/index.html>.
PUB TYPE Information Analyses (070)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Behavioral Objectives; Career Education; Competence; Competency Based Education; Education Work Relationship; Employment Potential; Employment Qualifications; *Job Analysis; Job Performance; Job Skills; Minimum Competencies; Occupational Clusters; Postsecondary Education; Program Development; *Program Implementation; Secondary Education; *Standards; Technical Education; Test Selection; *Test Validity; *Vocational Education

ABSTRACT

Again today, as 40 years ago, the idea of setting standards for career and technical education (CTE) has come to the fore. CTE practitioners have learned some lessons about implementing standards, among them that there is no "standard" standard; instead, there can be a confusing variety of standards. An analysis of standards reveals that there are content standards that state what learners should know and be able to do, whereas performance standards describe how well learners should know or be able to do something. Standards can cover these three general types of knowledge and skills: (1) technical standards that cover the knowledge and skills workers need in different jobs; (2) academic standards that cover traditional school subjects; and (3) employability standards that cover thinking, problem-solving, communication, interpersonal, and technology skills and personal qualities, such as responsibility and integrity. Technical standards can be divided in these three ways: industry core standards, occupational family standards, and occupationally specific standards. Practitioners must validate the set of standards to ensure that they are relevant to the local situation. The validation process should include all key stakeholders, use appropriate methods of review, and pilot test and refine standards. Once validated, standards can be incorporated in the CTE curriculum. In addition, academic and CTE standards should be "crosswalked" in order to show how academic skills are used in occupations. Financial and policy support are needed to implement standards. (Contains 14 references.) (KC)

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In Brief: Fast Facts for Policy and Practice
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Standards: An Embarrassment of Riches

To many career and technical education (CTE) practitioners, standards are nothing new; they might see today's standards movement as the successor to the behavioral or performance objectives of the 1960s. However, the scope of the standards movement today is far broader and more complex than 40 years ago (Losh 2000). What are CTE practitioners to do with all these different, often competing sets of standards? Which ones might be appropriate for your program? How can you actually implement standards—of whatever kind—in your own program? In this *In Brief*, we'll examine lessons learned by CTE practitioners so far in implementing standards.

Analyze Standards

Unfortunately, there is no "standard" standard; in fact, there can be a confusing variety from one set of standards to the next (Klein et al. 1996). Terminology is often inconsistent: an *industry cluster* in one state may be a *career major* in another; SCANS skills might be called *employability skills*, *generic workplace skills*, or *workplace readiness skills*. The term *skill standard* might cover almost any kind of content knowledge and skills.

There are more substantive variations as well. There may be little consistency in the way occupations and skills are clustered from one system of standards to the next (*ibid.*). A set of standards might contain only academic, employability, or technical standards—or it might combine all three kinds. In a combined set, academic, employability, and technical standards might be strictly differentiated with no overlap, or they might be consolidated into integrated statements describing the specific use of academic or employability skills in the context of technical tasks (Bailey and Merritt 1995).

Content standards state what learners should know and be able to do, whereas *performance standards* describe how well learners should know or be able to do something (Wills 1997). The form, content, and specificity of standards can vary greatly. Standards may include examples of skills required to perform a task, academic skills associated with occupational

skills, scenarios for applying skills, and performance assessments to determine students' skill levels (Klein et al. 1996).

So, before you can implement any set of standards, you need to know: What kinds of knowledge and skills do the standards cover? For what occupation or occupations? How do they cover that knowledge and skills? How complete is each standard? The standards might include descriptive information to answer those questions, or you may need to examine the standards and classify them accordingly.

First, you should consider three general types of knowledge and skills (Hudis 2000): (1) *technical standards* cover the knowledge and skills workers need in different jobs; (2) *academic standards* cover traditional school subjects; and (3) *employability standards* cover thinking, problem-solving, communication, interpersonal, and technology skills and personal qualities or attributes such as responsibility and integrity—skills and qualities needed in any job.

Technical standards, in the form of industry-based skill standards, have long been available from such educational agencies as the Vocational-Technical Education Consortium of States or business/industry/labor organizations such as the National Institute for Automotive Service Excellence or the American Welding Society. The 22 National Skill Standards Projects sponsored by the U.S. Departments of Education and Labor in 1993 were followed by the establishment of the National Skill Standards Board (NSSB) in 1994, with its voluntary partnerships, convening groups, and core and concentration area standards.

National academic standards are available from a number of educational associations or consortia. Other sets of employability standards define skills that all workers will need for the high-performance, 21st-century workplace, e.g., the SCANS skills (Secretary's Commission on Achieving Necessary Skills 1991) or Work Keys (ACT 2000).

In addition to traditional curriculum standards and newer proficiency standards, many states have adopted or developed

industry-based skill standards, in some cases embedded in statewide assessment and certification programs (Rahn, O'Driscoll, and Hudecki 1999): California's Career-Technical Assessment Program (C-TAP); Ohio's Integrated Technical and Academic Competencies (ITACS); and Oregon's Certificate of Initial Mastery (CIM) and Certificate of Advanced Mastery (CAM), now aligned with the new Performance-Based Admissions Standards (PASS) for the state's university system.

Second, you should keep in mind that technical standards and the jobs involved can be divided three ways (Wills 1997):

- *Industry core standards* cover the knowledge and skills needed in most occupations across a whole industry—the knowledge and skills that almost any worker would need in hospitality or in electronics, for example.
- *Occupational family standards* cover the knowledge and skills needed in a related set of occupations either in one industry or across industries—medical lab, imaging, and radiography workers in the diagnostic cluster in the health care industry, for example, or data entry workers in any industry.
- *Occupationally specific standards* cover the specific knowledge and skills in a single occupation, as in a traditional CTE program.

If the set of standards combines academic, employability, and technical standards, you should next determine whether they are differentiated or integrated. You should note whether the set contains content standards, performance standards, or both; and whether each standard also includes scenarios illustrating the occupational context for the standard and/or an assessment instrument.

Validate Standards

Next, it is crucial to validate the set of standards to ensure that they are relevant to your own local situation. You can use this process to validate standards that you're adopting or developing (National Skill Standards and Assessment Collaborative 1998):

- **Include all key stakeholders.** You need to ensure that standards meet everyone's needs—employers, employees, administrators, educators, parents, and students. Including everyone in the process allows everyone input.
- **Use appropriate methods to review and validate.** Standards should be reviewed and validated by groups other than those who drafted them or recommended adopting them. You might use an external review committee with representatives of all key stakeholders for feedback on content appropriateness, clarity, and usefulness; mail surveys for widespread feedback on relevance and importance; and/or focus groups of teachers, employers, and/or workers for more in-depth information.
- **Pilot test and refine standards.** Validated standards should be pilot tested to ensure that they are applicable and accessible to all learners; the pilot test should cover both instruction and assessment with diverse groups of both students and workers.

Involvement of the local employment community (e.g., employers, workers, unions, trade and professional associations) is particularly important—not only because it has vital knowledge about local skill requirements but also because it can be a valuable partner in providing technical assistance, classroom resources, industry experiences for educators, and advocacy of your new standards (Employment and Training Administration 1999).

Process Standards

Once validated, standards can be incorporated in the CTE curriculum, which involves comparing existing content, teaching and learning practices, and assessment to the new standards (Levande et al. 1998). To process standards, review each one to determine whether it is covered in the current curriculum and, if so, whether current content, practices, and assessment are appropriate. Then, identify appropriate content, practices, and assessment for all standards not currently covered and all standards for which current content, practices, and assessment are not appropriate. Next, plan and develop the appropriate content, practices, and assessment needed. Finally, you should implement the content, practices, and assessment you have developed and evaluate their effectiveness.

Crosswalk Standards

One crucial step in implementing standards is to crosswalk academic standards

with technical standards—that is, determine specifically how academic skills are used in the occupation in question. Academic standards such as math skills and knowledge in scientific disciplines are often deeply embedded in specific occupational tasks and firmly tied to the use of technology or tools; academic standards may be so intertwined with context that it takes more than a cursory look to find them (Stasz and Brewer 1999).

Furthermore, sets of purely academic standards often do specify workplace applications of academic skills, and the academic standards included in sets of industry-based technical standards may be nothing more than abstract academic skills unconnected to their use in the workplace (Bailey 1997). Academic and CTE practitioners must collaborate to crosswalk academic and technical standards and plan and develop appropriate content, practices, and assessment.

Support Standards

The job of reorganizing CTE programs around new standards can be enormous. In particular, considerable time may be needed to analyze, validate, process, and crosswalk standards, with attendant development of new curriculum content, teaching and learning practices, and assessment. Financial resources may also be needed for equipment purchases (Haimson and Hulsey 1999). Administrators can provide support in the form of policy, release time, resources, technical assistance, and professional development opportunities for CTE staff, not only for initial development of standards-based curriculum components but also for keeping curriculum components scrupulously up to date (Hudis 2000).

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- The work reported herein was supported under the National Dissemination Center for Career and Technical Education, PR Award (No. V051A990004) as administered by the Office of Vocational and Adult Education, U.S. Department of Education. However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U.S. Department of Education, and you should not assume endorsement by the Federal Government.

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